UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,281	06/01/2001	Stefan Schaffler	P01,0158	4895

7590 07/22/2005

KEVIN R. SPIVAK
MORRISON & FOERSTER LLP
2000 PENNSYLVANIA AVENUE, N.E.
WASHINGTON, DC 20006-1888

EXAMINER	
THANGAVELU, KANDASAMY	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/857,281	SCHAFFLER ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicants' amendment dated May 4, 2005. Claims 1-9 were amended. Claims 1-10 of the application are pending. This office action is made final.

Claim Objections

2. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

3. Claims 1, 3-9 are objected to because of the following informalities:

Amended Claim 1 deals with computer readable medium containing program instruction for designing a technical system. It then lists various limitations which are all steps of some method. It is not understood how these steps are related to the computer readable medium containing program instruction for designing a technical system.

Claims 3-9 claim the computer readable medium as claimed in claim 1 or other claims and list as limitations various steps of some method. It is not understood how these steps are related to the computer readable medium as claimed in claim 1 or other claims.

Appropriate corrections are required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

6. Claims 1-9 claim computer readable medium containing program instruction for designing a technical system, which are product claims. However, the limitations included in the claims are all steps of some method. Therefore the applicants are claiming both the product and the method in each claim. 35 U.S.C. 101 as stated in Paragraph 4 above allows claiming only a process (method), a machine (system or apparatus), a manufacture (product) or a composition in one claim. The claims are rejected for including elements based on multiple statutory bases in each claim.

The applicants can overcome this rejection by writing the claims as either method claims or computer readable medium (product) claims and including the limitations that are steps of the method or elements of the product.

7. Independent claim 1 recites a computer readable medium containing program instruction for designing a technical system. The limitations recited in claim contain the steps implemented

in the computer program which is not statutory subject matter. To be statutory, the computer readable medium should include a program comprising instructions which when executed in a computer performs a process for designing a technical system comprising the steps included in the limitations.

Claims 2-9 deal with the computer readable medium of claim 1 or other claims, but include limitations which are steps. The computer readable medium of claim 1 is not statutory subject matter and therefore, the computer readable medium claimed in these claims is also not statutory subject matter.

8. Claims 1-9 would be statutory if claim 1 is rewritten as:

A computer readable medium containing program instruction which when executed on a computer perform a process for designing a technical system, the process comprising:

a) providing a substitute model that describes measurement data of a predetermined system;

....

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b)

only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

10. Claims 1-3 and 8-10 are rejected under 35 U.S.C. § 102(e) as being anticipated by **Klimasauskas et al.** (U.S. Patent 6,278,962).

10.1 **Klimasauskas et al.** teaches hybrid linear neural network process control. Specifically, as per claim 1, **Klimasauskas et al.** teaches a method for designing (modeling) a technical system (CL1, L11-12), comprising the steps of:

providing a substitute model that describes measurement data of a predetermined system (CL3, L22-25; CL3, L25-29; CL3, L2-3);

determining a numerical value for a quality of the substitute model by comparing the measurement data of the predetermined system with data determined by the substitute model (CL3, L30-33; the residuals between the primary analyzer outputs and the target process variables or the sensed variables are indicators of the quality of the model; one can develop a numerical value for the quality of the model using the residuals; CL7, L53-57);

adapting the substitute model from the numerical value for the quality to be as high of a quality as possible (CL3, L30-37; CL3, L40-42; CL6, L38-48; CL7, L53 to CL8, L4); and

applying the substitute model adapted with regard to its quality in a design of the technical system (CL3, L30-37; CL5, L34-45; CL6, L38-48; CL6, L57-62; CL7, L53 to CL8, L4).

Per claim 2: **Klimasauskas et al.** teaches that the substitute model is a regression model (CL8, L50-52; CL8, L55-57; CL8, L65-67).

Per claim 3: **Klimasauskas et al.** teaches the step of determining a numerical value for a quality further utilizes a mean square deviation of the measurement data from the data determined by the substitute model (CL3, L30-37; the residuals between the primary analyzer outputs and the target process variables or the sensed variables are indicators of the quality of the model; one can develop a numerical value for the quality of the model using the residuals; CL7, L53 to CL8, L4; CL8, L50-52).

Per claim 8: **Klimasauskas et al.** teaches controlling a technical plant utilizing the data obtained by designing (CL1, L11-12; CL5, L6-9; CL5, L34-45).

Per claim 9: **Klimasauskas et al.** teaches online adaptive control for the technical plant (CL1, L11-12).

10.2 As per claim 10, **Klimasauskas et al.** teaches an apparatus for designing a technical system, comprising a processor unit (fig. 1; Fig. 2; CL5, L6-9; CL5, L34-45); which is set up in such a way that

measurement data of a predetermined system are described based on a substitute model and stored in the processor unit (CL3, L22-25; CL3, L25-29);

a numerical value for a quality of the substitute model is determined by the processor unit by comparing the measurement data of the predetermined system with data determined by the substitute model (CL3, L30-33; the residuals between the primary analyzer outputs and the target process variables or the sensed variables are indicators of the quality of the model; one can develop a numerical value for the quality of the model using the residuals; CL7, L53-57); and

the substitute model is adapted, utilizing the processor unit, from the numerical value for the quality to be as of high a quality as possible (CL3, L30-37; CL3, L40-42; CL6, L38-48; CL7, L53 to CL8, L4);

wherein the substitute model adapted with regard to its quality is used for designing the technical system (CL3, L30-37; CL5, L34-45; CL6, L38-48; CL6, L57-62; CL7, L53 to CL8, L4).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Klimasauskas et al.** (U.S. Patent 6,278,962) in view of **Amado** (U.S. Patent 5,701,400).

13.1 As per claim 4, **Klimasauskas et al.** teaches the method of Claim 1. **Klimasauskas et al.** teaches the deviation of the latter (measurement data) from the data determined by the substitute model (CL3, L25-33). **Klimasauskas et al.** does not expressly teach sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model. **Amado** teaches sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model (CL67, L32-34), because that would allow elimination of irrelevant information (CL17, L55). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Klimasauskas et al.** with the method of **Amado** that included sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model. The artisan would have been motivated because that would allow elimination of irrelevant information.

Klimasauskas et al. does not expressly teach picking out a predetermined number of n% of worst measurement data. **Amado** teaches picking out a predetermined number of n% of worst measurement data (CL37, L4-5), because that would allow elimination of irrelevant information

(CL17, L55). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Klimasauskas et al.** with the method of **Amado** that included picking out a predetermined number of n% of worst measurement data. The artisan would have been motivated because that would allow elimination of irrelevant information.

13.2 As per claim 5, **Klimasauskas et al.** teaches the method of Claim 1. **Klimasauskas et al.** teaches the deviation of the latter (measurement data) from the data determined by the substitute model (CL3, L25-33). **Klimasauskas et al.** does not expressly teach sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model. **Amado** teaches sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model (CL67, L32-34), because that would allow elimination of irrelevant information (CL17, L55). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Klimasauskas et al.** with the method of **Amado** that included sorting the measurement data according to their quality, with respect to the deviation of the latter from the data determined by the substitute model. The artisan would have been motivated because that would allow elimination of irrelevant information.

Klimasauskas et al. does not expressly teach picking out a predetermined number of n% of worst measurement data unless this data lie in a continuous range. **Amado** teaches picking out a predetermined number of n% of worst measurement data unless this data lie in a continuous range (CL37, L4-5), because that would allow elimination of irrelevant information (CL17, L55). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention

to modify the method of **Klimasauskas et al.** with the method of **Amado** that included picking out a predetermined number of n% of worst measurement data unless this data lie in a continuous range. The artisan would have been motivated because that would allow elimination of irrelevant information.

14. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Klimasauskas et al.** (U.S. Patent 6,278,962) in view of **Hoffberg et al.** (U.S. Patent 5,920,477).

14.1 As per claims 6 and 7, **Klimasauskas et al.** teaches the method of Claim 1. **Klimasauskas et al.** does not expressly teach reducing an amount of measurement data in the course of a preprocessing operation; and classifying, in the preprocessing operation, of the measurement data. **Hoffberg et al.** teaches reducing an amount of measurement data in the course of a preprocessing operation; and classifying, in the preprocessing operation, of the measurement data (CL27, L38-42), because that would allow eliminating data not necessary to characterize the program (CL27, L41-42). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Klimasauskas et al.** with the method of **Hoffberg et al.** that included reducing an amount of measurement data in the course of a preprocessing operation; and classifying, in the preprocessing operation, of the measurement data. The artisan would have been motivated because that would allow eliminating data not necessary to characterize the program.

Response to Arguments

15. Applicants' arguments with respect to 35 USC 103 (a) rejections are not persuasive.

15.1 As per the applicants' argument that "claim 1 recites a computer readable medium containing program instruction for designing a technical system; Klimasauskas teaches controlling a technical system, not designing one; the features of claim 1 are not taught by Klimasauskas", the examiner respectfully disagrees.

The Examiner takes the position that claim 1 in essence deals with modeling a system based on measurement data, using the model to predict the outputs of the system, computing the difference or residuals between the model outputs and the measured data and deriving a numerical value of the quality of the model based on the residuals and using the residuals or the numerical value of the quality to modify or adapt the model and then applying the model to achieve the purpose of the model. Applying the model in the design of a system is one purpose of the model. The fact that Klimasauskas uses the model ***to control a system*** and the applicants use the model or the computer readable medium containing program instruction ***to design a system*** does not allow the applicants a claim for the method or the computer readable medium. 35 USC 101 states that only a product or method can be claimed but not its intended use.

15.2 As per the applicants' argument that "Khmasauskas does not teach that an explicit numerical value for the quality of the substitute model is determined on comparing result;

Klimasauskas also fails to disclose a numerical value for the quality of the measurement data.", the examiner respectfully disagrees.

Klimasauskas et al. teaches determining a numerical value for a quality of the substitute model by comparing the measurement data of the predetermined system with data determined by the substitute model (CL3, L30-33; the residuals between the primary analyzer outputs and the target process variables or the sensed variables are indicators of the quality of the model; one can develop a numerical value for the quality of the model using the residuals; CL7, L53-57).

15.3 As per the applicants' argument that "Klimasauskas does not disclose adaptation of the primary analyzer respectively "adapting the substitute model from the numerical value for the quality to be as high of a quality as possible" since no numerical value for a quality is mentioned", the examiner respectfully disagrees.

Klimasauskas et al. teaches adapting the substitute model from the numerical value for the quality to be as high of a quality as possible (CL3, L30-37; CL3, L40-42; CL6, L38-48; CL7, L53 to CL8, L4).

Conclusion

ACTION IS FINAL

16. Applicant's arguments with respect to claim rejections under 35 USC § 102 (e) and 103 (a) are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
July 15, 2005

Paul L. Rodriguez 7/20/05
Primary Examiner
Art Unit 2125